

Detecting Minute Levels of Pesticide Residues in Food for Dietary Risk Assessment

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The Food Quality Protection Act (FQPA) required a new stricter standard for food safety, particularly for the diets of children. For dietary exposure estimates used in risk assessment as required by FQPA, EPA needed more data on pesticide residues in food at lower levels than historically available, particularly for high-priority pesticides, such as the organophosphates and carbamates. Two new analytical methods developed by OPP's Analytical Chemistry Lab have been used by FDA enforcement labs to analyze for 57 different organophosphates and 24 carbamates in 10 different food crops at the parts per billion (ppb) level. The data collected by the FDA laboratories using the new methods more accurately indicate the precise levels of organophosphates and carbamates in our food supply. These accurate data can now be used for dietary risk assessments.

Historically, data were limited to the parts-per-million range because of the limitations in analytical chemistry at the time. But analytical chemistry is an evolving science. Instrument technology and sample preparation techniques improve continuously, allowing analytical chemists to accurately detect pesticide residues at lower and lower levels. With new improvements in technology and better sample preparation techniques, we can now calculate as low as parts per billion (ppb) for many pesticides and even as low as parts per trillion.

Among other things, the poster will show a graphic representation of the process of analysis and pictures of laboratory equipment.

We will relate this project to food safety (possibly a picture of children eating and a list of the foods analyzed).